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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup>:</b> <b>C08L 9/00, C04B 26/04, E01C 5/00</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 98/44033</b> <b>(43) International Publication Date:</b> 8 October 1998 (08.10.98)
<b>(21) International Application Number:</b> PCT/GB98/00937 <b>(22) International Filing Date:</b> 25 March 1998 (25.03.98) <b>(30) Priority Data:</b> 9706380.4 27 March 1997 (27.03.97) GB <b>(71) Applicant (for all designated States except US):</b> CAIRN HOLDINGS (UK) LIMITED [GB/GB]; Carrington Business Park, Carrington, Manchester M31 4YR (GB). <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> POLLITT, Clifford, Bruce [GB/GB]; Cuerdon Cottage, Cuerdon Drive, Thelwall, Warrington, Cheshire WA4 3JU (GB). <b>(74) Agent:</b> URQUHART-DYKES & LORD; Northern Assurance Buildings, Albert Square, Manchester M2 4DN (GB).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> BINDING MIXTURES  <b>(57) Abstract</b>  A binding mixture intended primarily for binding sand or ground glass particles used, for example, as a filler material between paving elements to penetrate the filler material and make the joint rigid, the mixture comprising between 20 % and 40 % by weight of a polybutadiene, at least a substantial proportion of the remainder being a flow-enhancing solvent with additives, if required, for colouring and deodorising the mixture.		

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**BINDING MIXTURES**

THIS INVENTION relates to binding mixtures.

According to this invention a binding mixture for binding particles comprises between 20% and 40% of a polybutadiene with at least a substantial proportion of the remainder of the mixture being a flow-enhancing solvent, the % being by weight of the mixture.

The flow enhancing solvent may for example be SBP 140-165 aliphatic hydrocarbon, such as Benzene low odour.

A suitable liquid polybutadiene is that sold under the name UNIVEST S by Huls Aktiengesellschaft of Marl, Germany.

The binding mixture is intended primarily for binding sand particles or ground glass particles or mixtures of sand and ground glass used for example as filler material between paving elements of stone, clay, concrete or terracotta for example and is intended to harden and fix the filler material. The binding material penetrates the filler material and makes the joint rigid and difficult of removal by aggressive street cleaners and the natural elements.

The paving elements may form a road or other surface and are not restricted to pavements.

The binding mixture may be available in a pre-mixed air-

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tight container and may be applied to the joints in the paving by for example pouring, brushing, spraying or squeegeeing over and into the joint spaces, without leaving an unsightly deposit on the adjacent paving elements.

As the polybutadiene represents between 20% and 40% by weight of the mixture, the flow-enhancing solvent will usually form the remainder, save perhaps for the inclusion of a small quantity of another substance such as a colouring or deodorising additive. ✓

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**CLAIMS**

1. A binding mixture for binding particles comprising between 20% and 40% of a polybutadiene with at least a substantial proportion of the remainder of the mixture being a flow-enhancing solvent, the % being by weight of the mixture.
2. A binding mixture according to claim 1, wherein the polybutadiene is in liquid form.
3. A binding mixture according to Claim 1 or Claim 2, wherein the flow-enhancing solvent is SBP 140-165 aliphatic hydrocarbon.
4. A binding mixture according to any preceding claim, being pre-mixed and provided in an air tight container.
5. A binding mixture according to any preceding claim, including a colouring or deodorising addition.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 98/00937

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C08L9/00 C04B26/04 E01C5/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C08L C04B E01C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 40 35 359 C (GÜLS V) 16 April 1992 see column 2, line 53 - line 68; claims see column 6, line 25 - line 55 ---	1-5
X	FR 2 584 065 A (PECHA JEAN CLAUDE) 2 January 1987 see claims ---	1-5
X	DE 44 21 970 A (STEIDLE SAILER MANFRED) 5 January 1995 see claims -----	1-5

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 4035359 C	16-04-1992	AT 121059 T	15-04-1995
		AU 652779 B	08-09-1994
		AU 8617891 A	11-06-1992
		CA 2098394 A	08-05-1992
		CN 1061424 A	27-05-1992
		DE 59105204 D	18-05-1995
		WO 9208679 A	29-05-1992
		EP 0556194 A	25-08-1993
		JP 6501504 T	17-02-1994
		KR 9702026 B	21-02-1997
		PT 99454 A	30-09-1992
FR 2584065 A	02-01-1987	EP 0211712 A	25-02-1987
DE 4421970 A	05-01-1995	NONE	